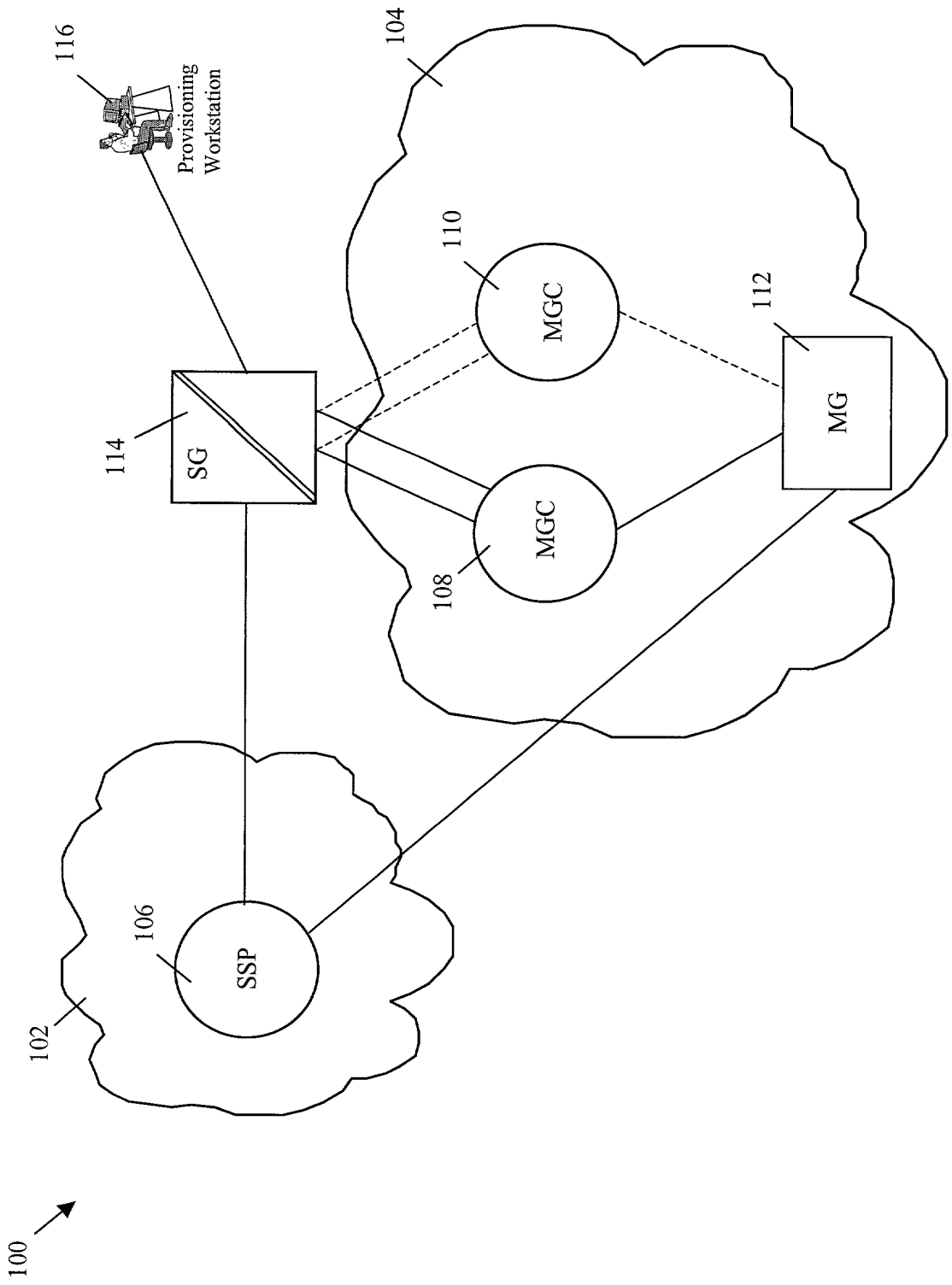
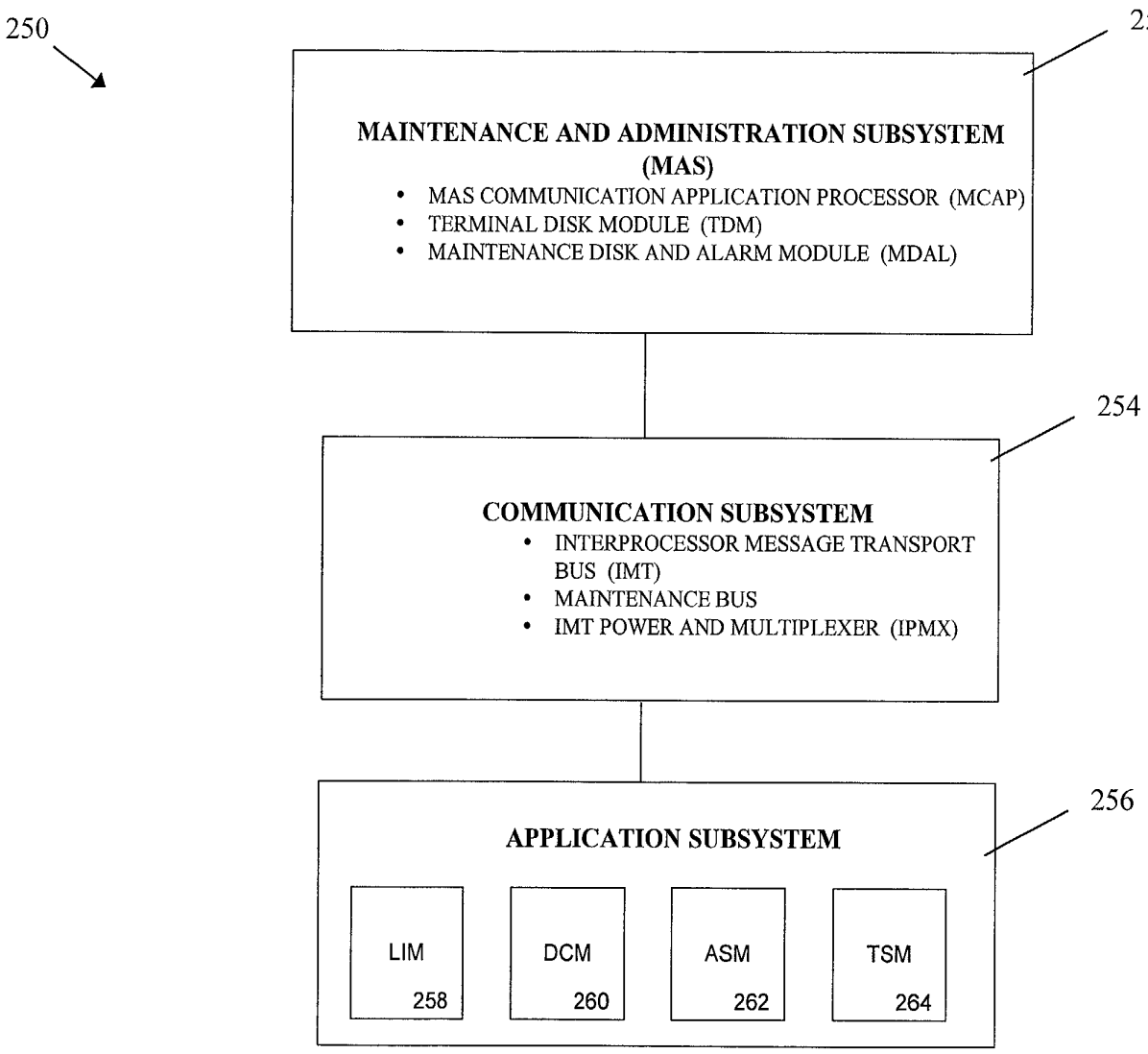


PRIOR ART

Figure 1



PRIOR ART

Figure 2

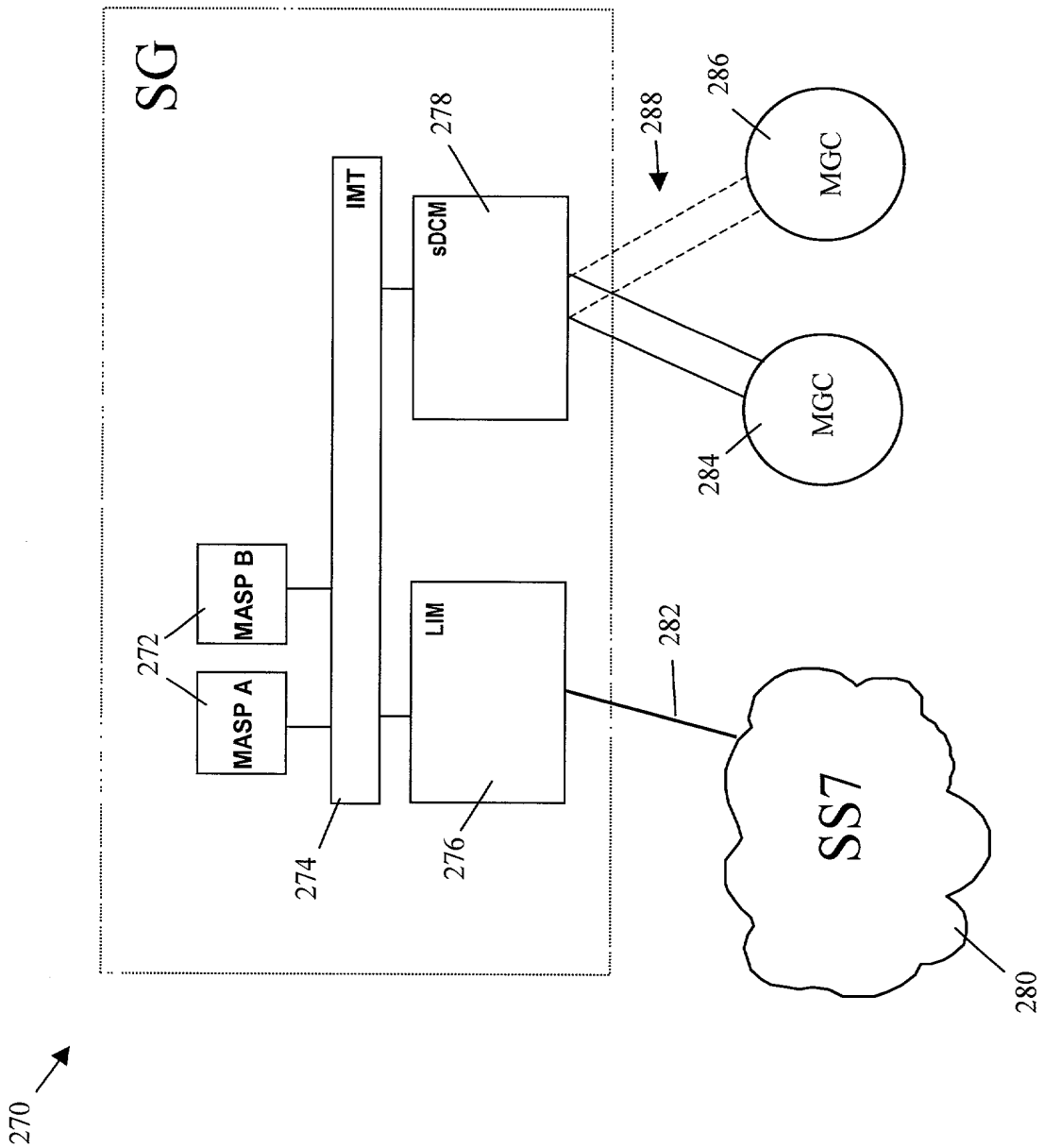

270
SG
MASP B
MASP A
272
IMT
274
LIM
276
sDCM
278
288
286
MGC
284
MGC
282
SS7
280

Figure 3

Title: Methods and Systems for Providing Dynamic Routing Key Registration
Inventor(s): Davidson et al.
Docket No.: 1322/45/2

TALI Registration Message Diagram

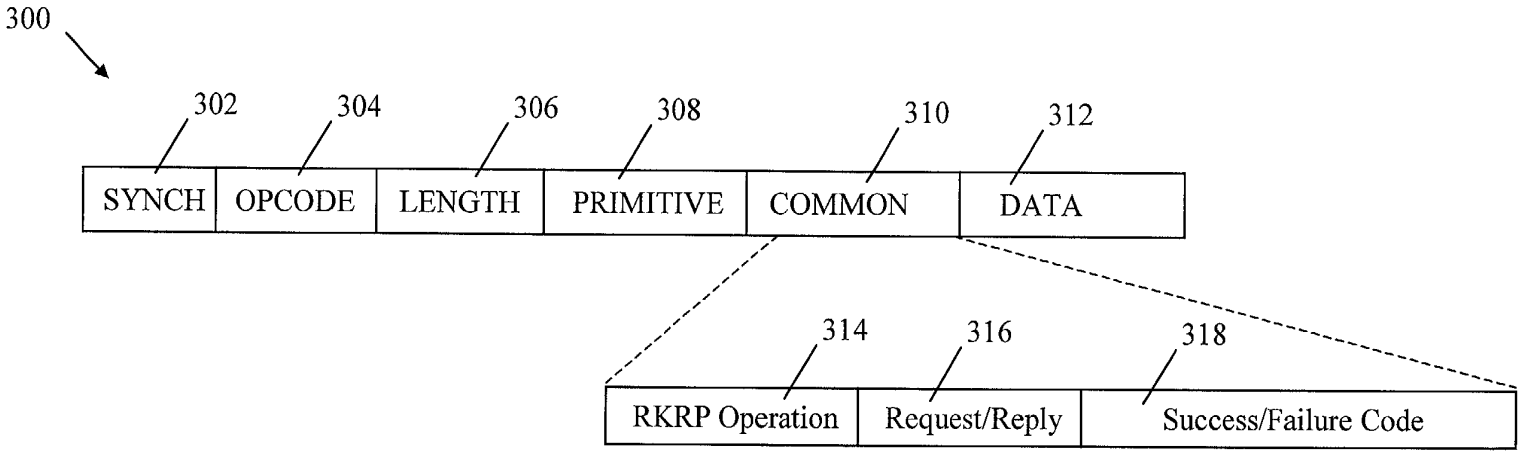


Figure 4

Routing Key Specific Data

330

332 Routing Key Type	334 Common	336 RKRP Flags	338 SI	340 DPC	342 OPC	344 CICS	346 CICE	348 SPLIT	350 NCICS	352 NCICE	354 SSN
CIC Based	x	x	x	x	x	x	x	x	x	x	
SCCP Based	x	x	x	x							x
DPC - SI - OPC	x	x	x	x	x						
DPC - SI - *	x	x	x	x							
DPC - * - *	x	x		x							
* - SI - *	x	x	x								
* (Default)	x	x									

Additional Registration Message Fields

Figure 5

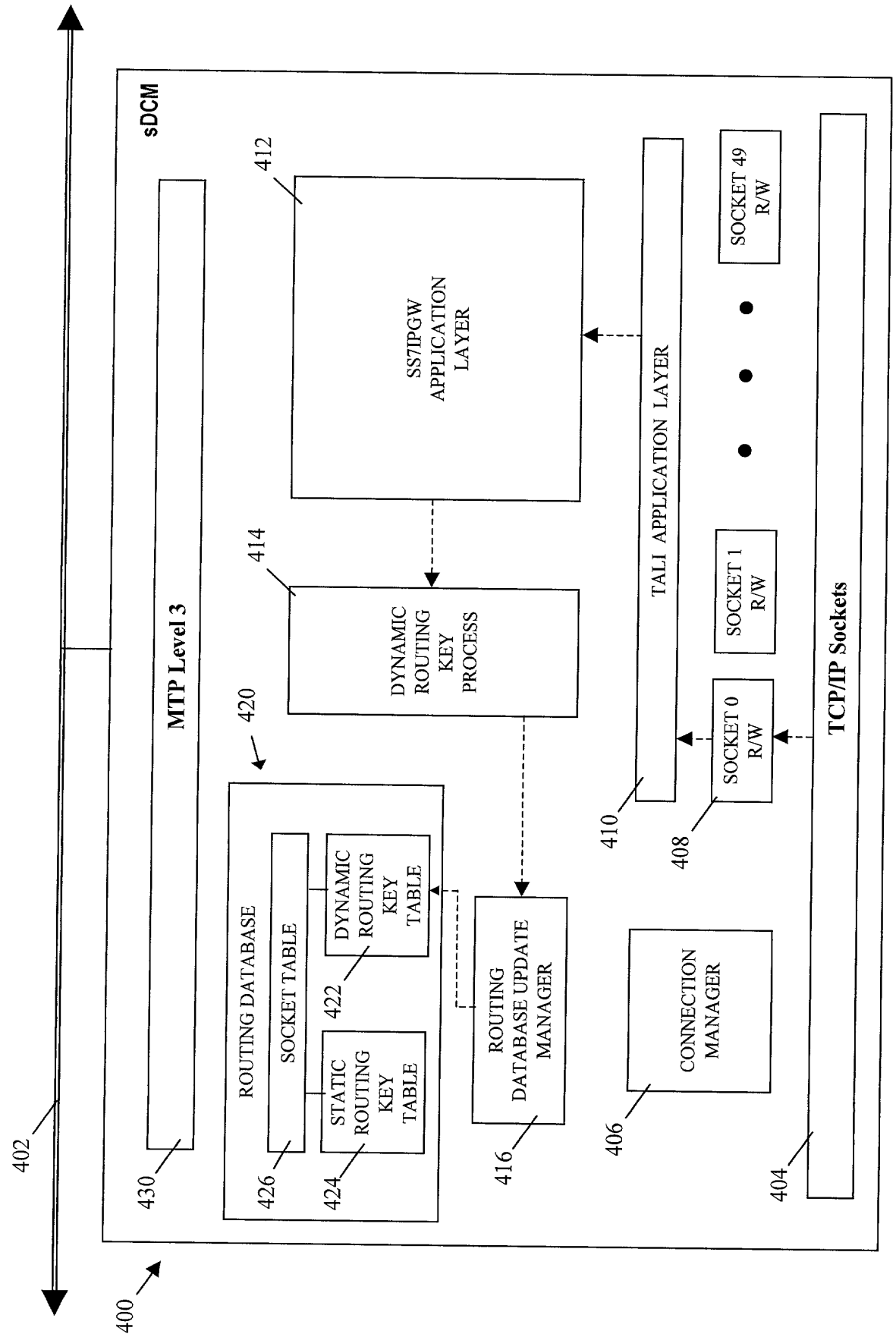

400
402
sDCM
MTP Level 3
430
412
SS7IPGW APPLICATION LAYER
414
DYNAMIC ROUTING KEY PROCESS
420
ROUTING DATABASE
SOCKET TABLE
426
DYNAMIC ROUTING KEY TABLE
422
STATIC ROUTING KEY TABLE
424
ROUTING DATABASE UPDATE MANAGER
416
CONNECTION MANAGER
406
TALI APPLICATION LAYER
410
SOCKET 0 R/W
408
SOCKET 1 R/W
SOCKET 49 R/W
TCP/IP Sockets
404

Figure 6

Title: Methods and Systems for Providing Dynamic Routing Key Registration
Inventor(s): Davidson et al.
Docket No.: 1322/45/2

422

Dynamic Routing Key Table

KEY(s)									DATA
450 DPC	452 OPC	454 SI	456 CICS	458 CICE	460 SPLIT	462 NCICS	464 NCICE	466 SSN	468 SOCKET ID
3-1-1	6-1-1	3	-	-	-	-	-	54	Sock1
3-1-2	6-1-1	3	-	-	-	-	-	67	Sock2
3-1-3	6-1-1	3	-	-	-	-	-	12	Sock3
1-1-1	6-1-1	3	-	-	-	-	-	45	Sock4
1-1-2	7-1-1	5	25	28	-	-	-	-	Sock5
1-1-3	6-1-1	5	12	13	-	-	-	-	Sock6

Figure 7

Title: Methods and Systems for Providing Dynamic Routing Key Registration
Inventor(s): Davidson et al.
Docket No.: 1322/45/2

426

Socket Table					
KEY	**DATA**				
480	482		484		486
Socket ID	Local		Distant		Socket Status
	IP Address	TCP Port	IP Address	TCP Port	
Sock1	10.10.10.10	24	10.10.10.1	24	A
Sock2	10.10.10.10	42	10.10.10.1	42	A
Sock3	10.10.10.10	12	10.10.10.1	12	A
Sock4	10.10.10.10	54	10.10.20.1	54	A
Sock5	10.10.10.10	16	10.10.20.1	16	A
Sock6	10.10.10.10	76	10.10.20.1	17	U

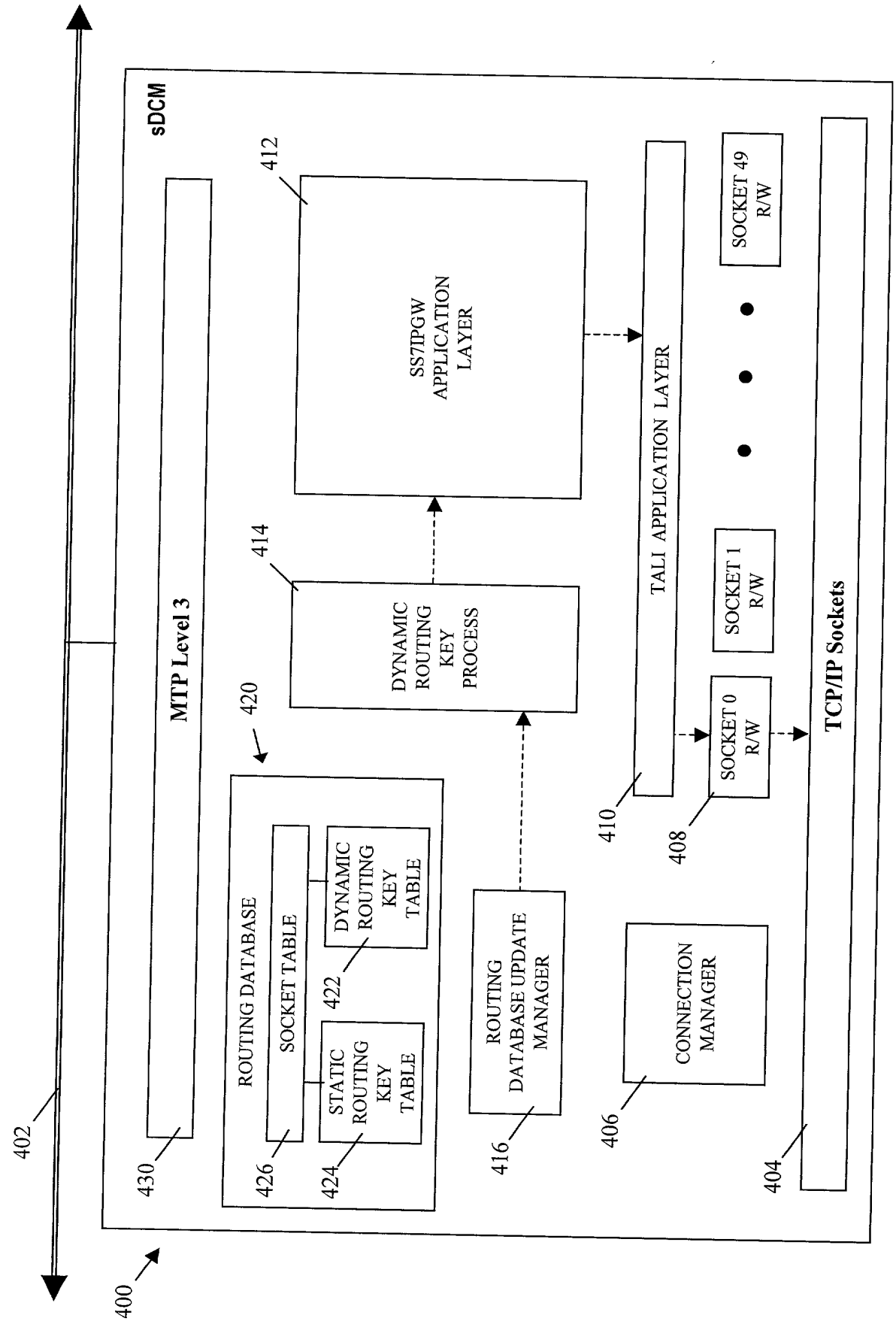
Figure 8

Title: Methods and Systems for Providing Dynamic Routing Key Registration
Inventor(s): Davidson et al.
Docket No.: 1322/45/2

500

Return Code (502)	SI (504)	Type of requests checked (506)	Description
1	all	all	Transaction successfully completed.
2	all	all	Length of TALI message is insufficient to contain all required information for 'rkrp' operation.
3	N/A	all	Unsupported 'rkrp' operation
4	all	all	Invalid SI. SI must be in range 0..15
5	all	all	Invalid SI/opcode combination. Split and resize only supported for SI=5. Enter, delete and override supported for all SI.
6	all	all	Invalid DPC. Point code cannot be zero, and type must be ANSI.
7	3	all with SI=3	Invalid SSN. SSN must be in range 0..255.
8	5	all with SI=5	Invalid OPC. Point code cannot be zero, and type must be ANSI.
9	5	all with SI=5	Invalid CICS. Must be in range 0..16383.
10	5	all with SI=5	Invalid CICE. Must be in range 0..16383.
11	5	all with SI=5	Invalid CIC range. CICS must be less than or equal to CICE. On a split operation, CICS must be strictly less than than CICE (cannot split an range with only one entry).
12	5	resize	Invalid NCICS. Must be in range 0..16383.
13	5	resize	Invalid NCICE. Must be in range 0..16383.
14	5	resize	Invalid new CIC range. NCICS must be less than or equal to NCICE.
15	5	split	Invalid SPLIT value. Must be in range 0..16383. Must be greater than CICS and less than or equal to CICE.
16	all, 5	enter, split	No free entries in table.
17	5	enter, override	CIC range overlaps but does not match existing entry.
18	all	enter	Entry already has 16 associations.
19	5	resize, split, override	Entry to be changed not found in table.
20	5	resize	New entry would overlap another entry (allowed to overlap the entry being changed, but no others).
21	all	delete	Entry to be deleted not found in table.

Figure 9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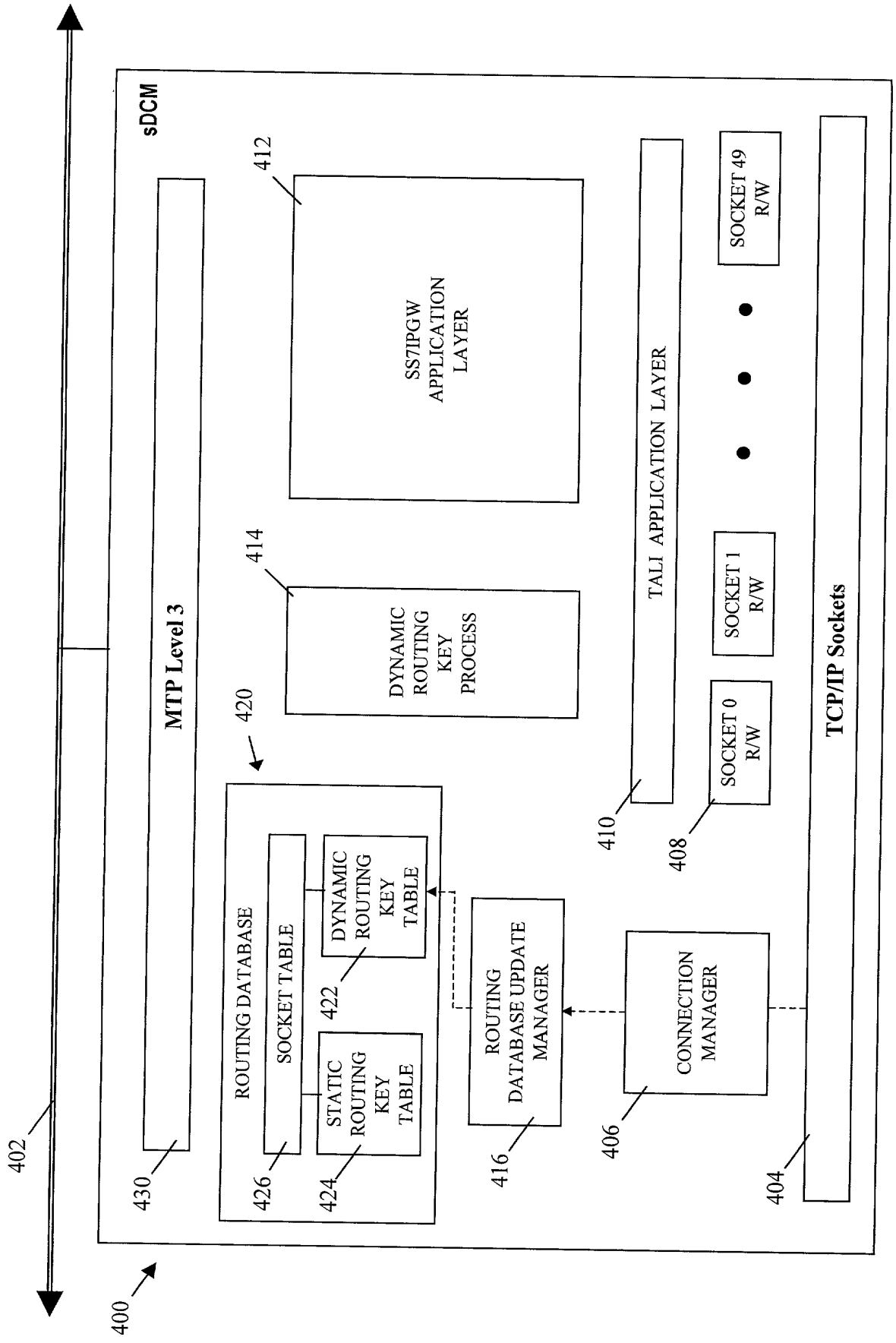
402
sDCM
MTP Level 3
430
ROUTING DATABASE
SOCKET TABLE
426
STATIC ROUTING KEY TABLE
424
DYNAMIC ROUTING KEY TABLE
422
420
ROUTING DATABASE UPDATE MANAGER
416
DYNAMIC ROUTING KEY PROCESS
414
SS7IPGW APPLICATION LAYER
412
CONNECTION MANAGER
406
TALI APPLICATION LAYER
410
SOCKET 0 R/W
408
SOCKET 1 R/W
SOCKET 49 R/W
TCP/IP Sockets
404

Figure 10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402
sDCM
MTP Level 3
430
ROUTING DATABASE
SOCKET TABLE
426
STATIC ROUTING KEY TABLE
424
DYNAMIC ROUTING KEY TABLE
422
420
ROUTING DATABASE UPDATE MANAGER
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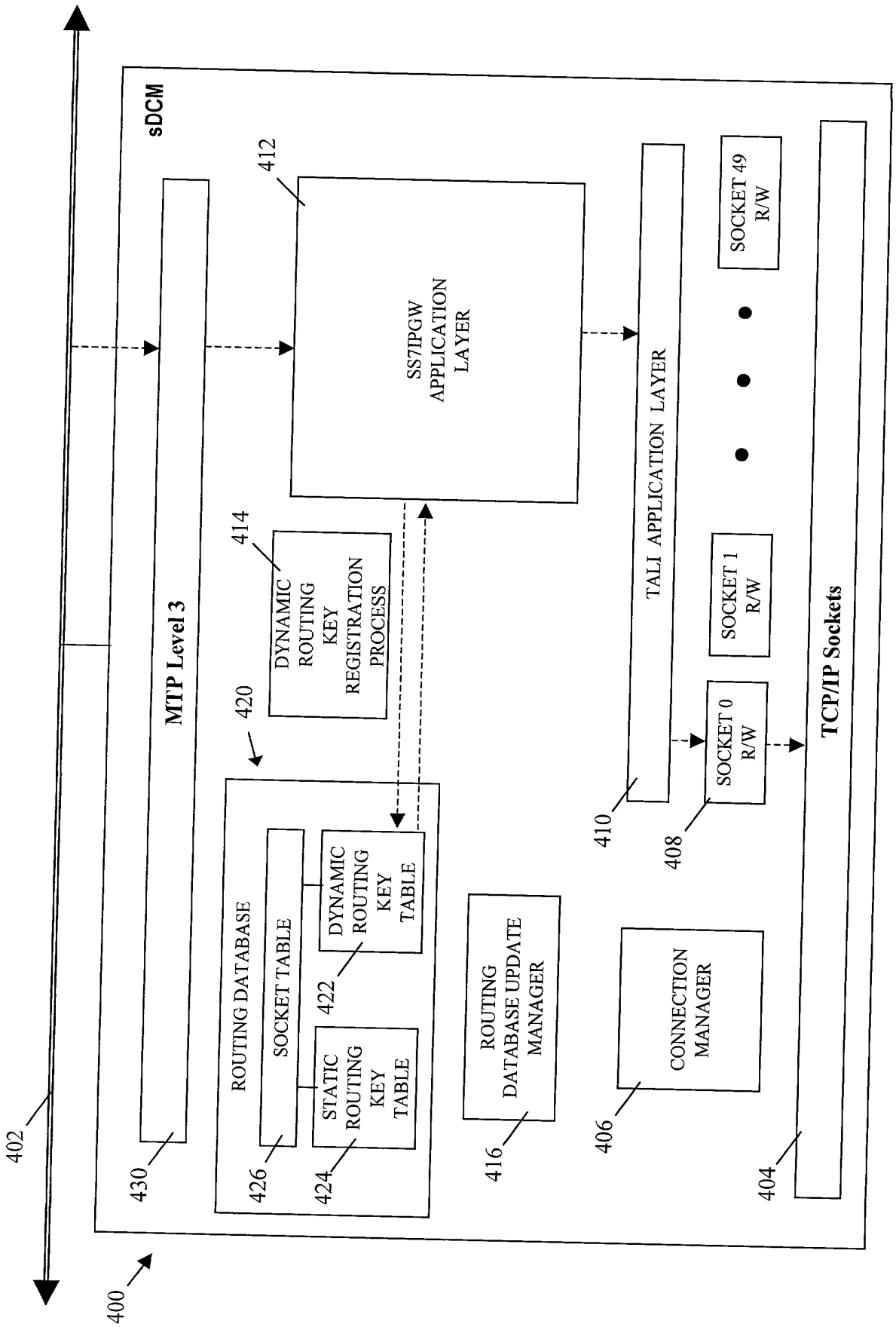
CONNECTION MANAGER
406
DYNAMIC ROUTING KEY PROCESS
414
SS7IPGW APPLICATION LAYER
412
TALI APPLICATION LAYER
410
SOCKET 0 R/W
408
SOCKET 1 R/W
SOCKET 49 R/W
TCP/IP Sockets
404

Figure 11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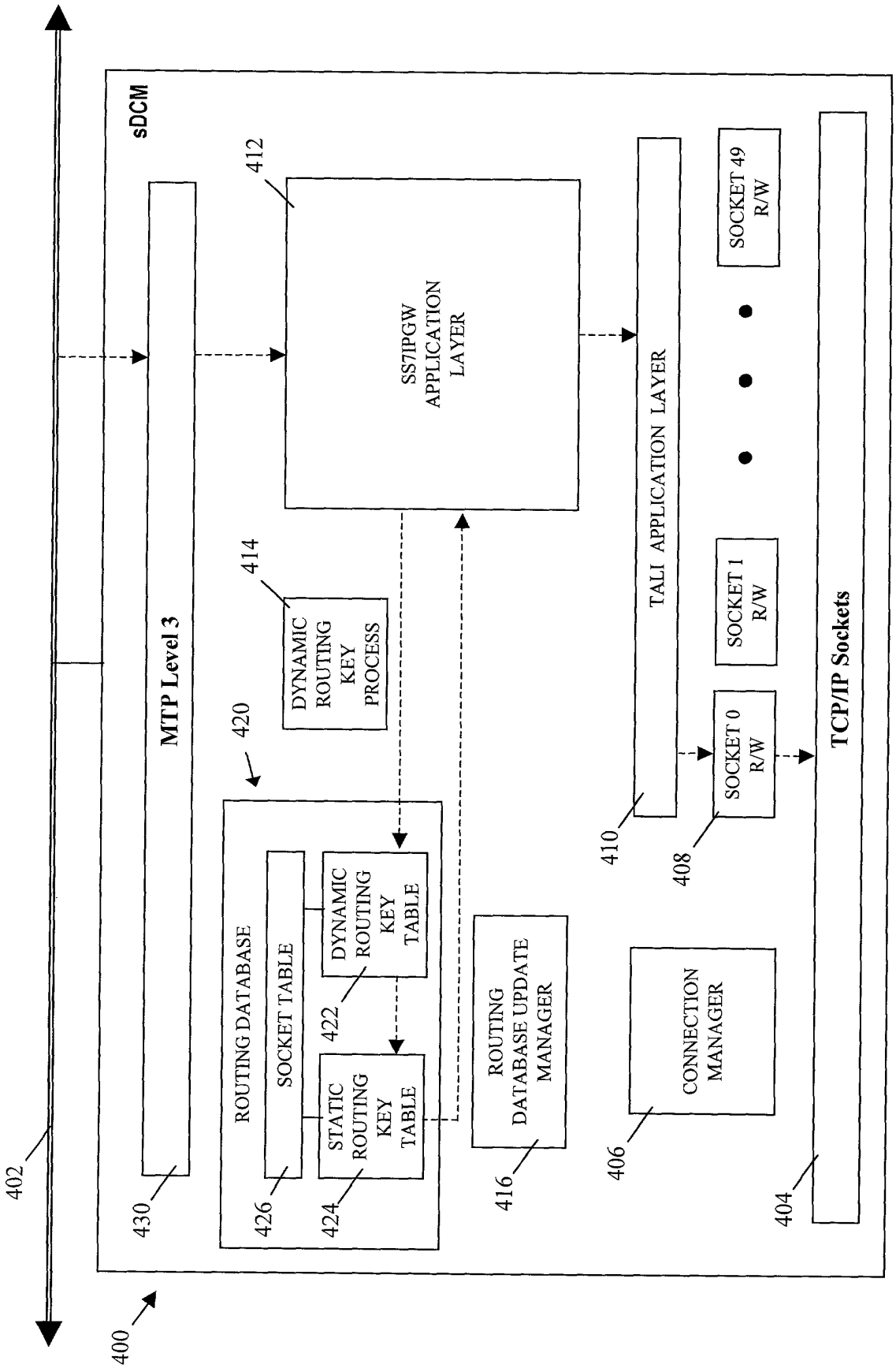
402
sDCM
MTP Level 3
430
412
SS7IPGW APPLICATION LAYER
414
DYNAMIC ROUTING KEY REGISTRATION PROCESS
420
ROUTING DATABASE
SOCKET TABLE
426
DYNAMIC ROUTING KEY TABLE
422
STATIC ROUTING KEY TABLE
424
ROUTING DATABASE UPDATE MANAGER
416
CONNECTION MANAGER
406
TALI APPLICATION LAYER
410
SOCKET 0 R/W
408
SOCKET 1 R/W
SOCKET 49 R/W
TCP/IP Sockets
404

Figure 12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402
sDCM
MTP Level 3
430
412
SS7IPGW APPLICATION LAYER
414
DYNAMIC ROUTING KEY PROCESS
420
ROUTING DATABASE
SOCKET TABLE
426
DYNAMIC ROUTING KEY TABLE
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STATIC ROUTING KEY TABLE
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ROUTING DATABASE UPDATE MANAGER
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CONNECTION MANAGER
406
TALI APPLICATION LAYER
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SOCKET 0 R/W
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SOCKET 1 R/W
SOCKET 49 R/W
TCP/IP Sockets
404

Figure 13

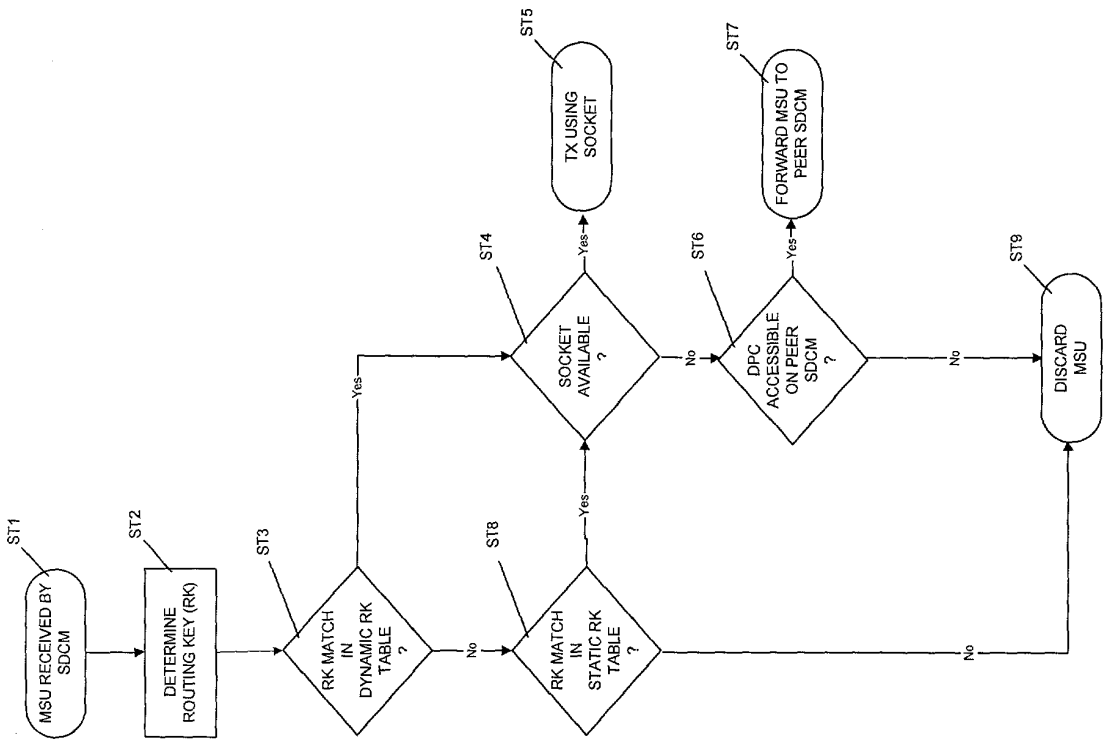
ST1
MSU RECEIVED BY SDCM
ST2
DETERMINE ROUTING KEY (RK)
ST3
RK MATCH IN DYNAMIC RK TABLE ?
Yes
No
ST4
SOCKET AVAILABLE ?
Yes
No
ST5
TX USING SOCKET
ST6
DPC ACCESSIBLE ON PEER SDCM ?
Yes
No
ST7
FORWARD MSU TO PEER SDCM
ST8
RK MATCH IN STATIC RK TABLE ?
Yes
No
ST9
DISCARD MSU

Figure 14

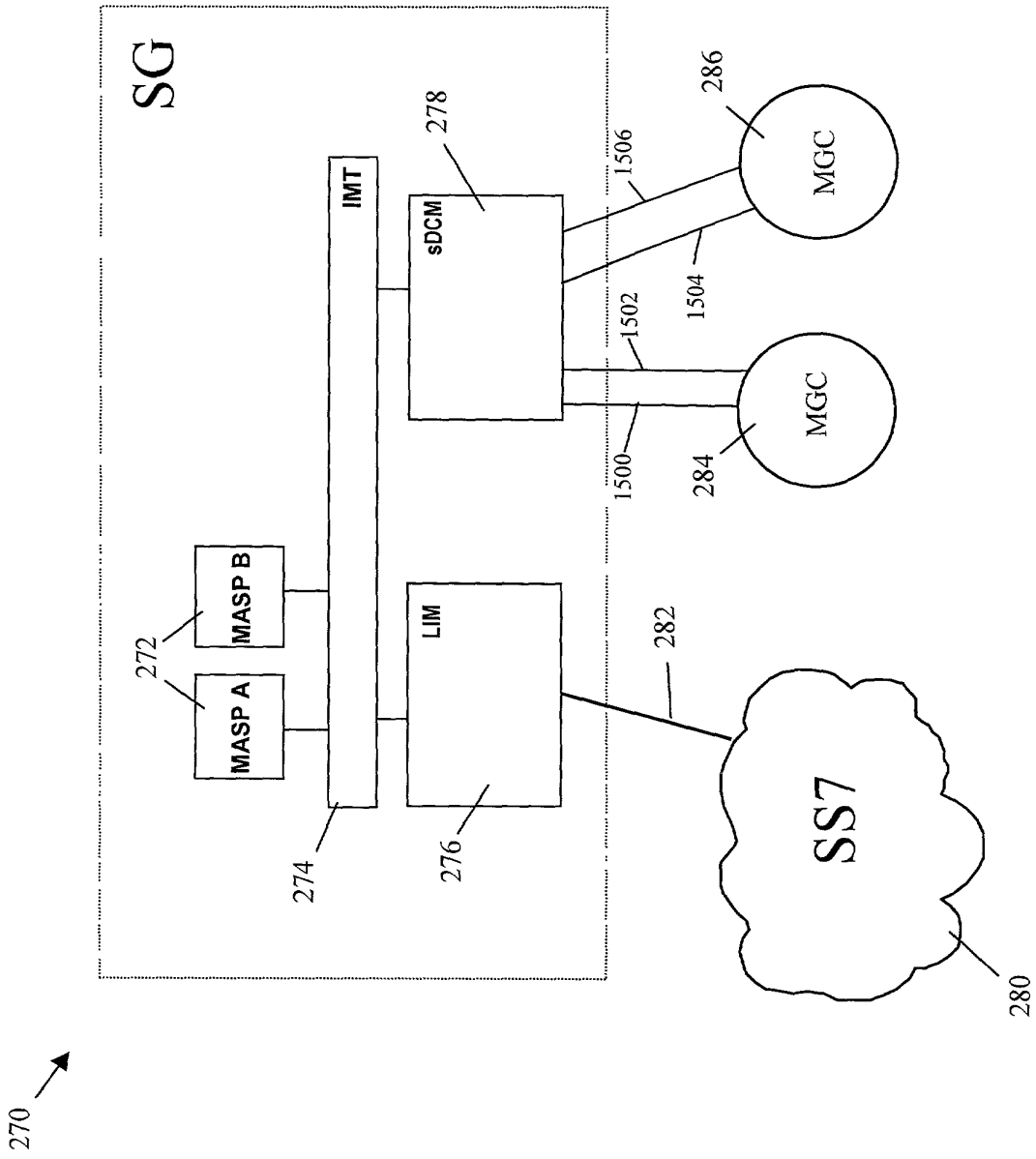
SG
MASP B
MASP A
IMT
sDCM
LIM
MGC
MGC
SS7
270
272
274
276
278
280
282
284
286
1500
1502
1504
1506

Figure 15